

## Chapter 3

# NSM Activity Domains, Functions, and Tasks

This chapter identifies and defines NSM activity domains, functions, and tasks that must be accomplished for effective and efficient use of network and systems resources. This chapter explains management activities for networks and systems, AISs, and telecommunications resources from the early planning stages throughout its daily operation, utilization, growth, and retirement.

### BACKGROUND

3-1. There is a common set of NSM activity domains, functions, and tasks; however, they are not integrated. Most of NSM functions and tasks are the same at various management levels; only the managed equipment and measurements differ.

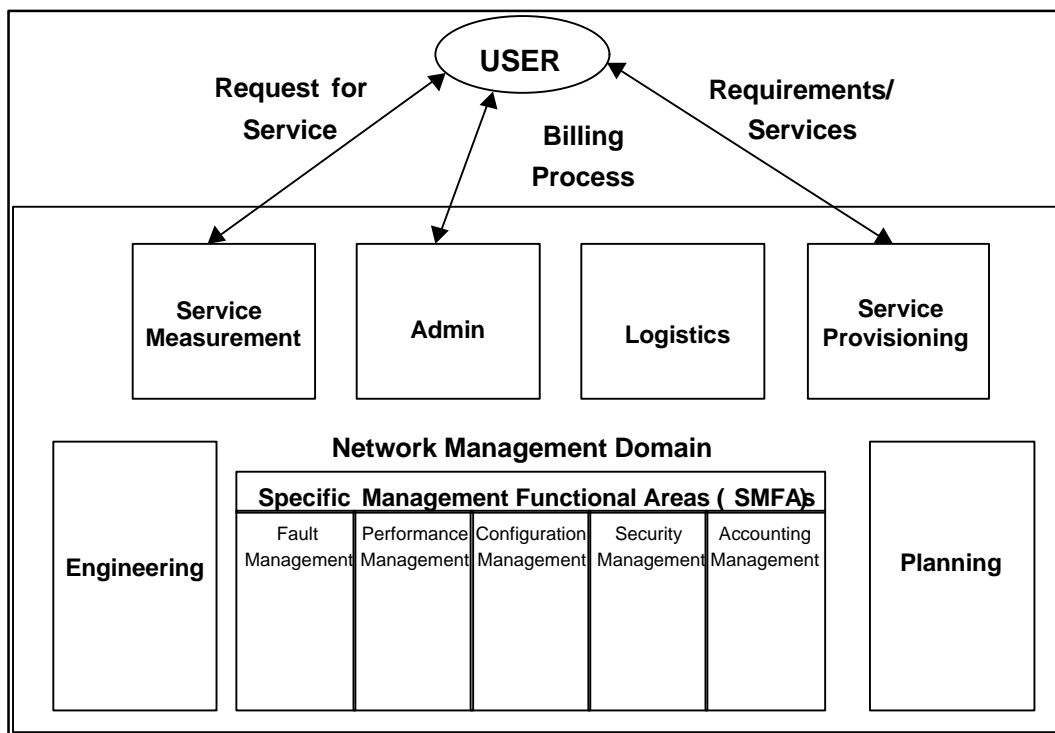
3-2. An activity domain is a major functional area of an NSM enterprise or Armywide view. Within each domain, functions that support its overall objective exist. Functions may or may not be interrelated. Each function can be divided into a set of tasks. Tasks may or may not be interrelated. Each task supports the analysis of the user-needs function in the planning activity domain. Figure 3-1 shows the NSM activity domains and functions.

3-3. NSM functions and tasks support the Army's signal and information management missions. These areas of support consist of processing–

- Facilities.
- Data networks.
- Messaging networks.
- Video networks.
- Voice networks.
- Imagery networks

3-4. The NSM functionality is broken down into seven activity domains:

- Planning.
- Service measurement.
- Service provisioning.
- SMFAs.
- Administration.
- Engineering.
- Logistics.



**Figure 3-1. NSM Activity Domains**

3-5. Functions and tasks may apply to user-owned, operated, and managed systems and telecommunication network and systems providers. A distinct separation exists between various networks and systems and their management and user equipment operation and its management. Multiple providers of NSM functions exist, and the allocation of roles and responsibilities among these entities is an ongoing process as technology, doctrine, and education change.

## PLANNING

3-6. This activity domain involves taking user requirements and developing the schedule and resources to his satisfaction. The planning activity domain is composed of non real-time functions that deal with the short term (less than two years) and long term (two to 20 years). It ensures that changes in requirements for services are collected, analyzed, prioritized, cost assessed, and scheduled for implementation. The ultimate goal of planning is to ensure resources are available to meet emerging near-term and long-term requirements and that proposed implementations conform to long-term objectives. The functions below are associated with planning.

## **ANALYSIS OF USER NEEDS**

3-7. NSM supports this function by defining the functions, capacity, and performance that a system provides. Tasks associated with the analysis of user needs include–

- Gathering requirements.
- Comparing requirements with available resources.
- Determining impact of requirements.
- Prioritizing requirements.
- Forecasting future requirements.

## **TECHNOLOGY ASSESSMENT**

3-8. This function is the evaluation of current and anticipated communications or information-processing technology to meet the Army's information management goals and objectives. The assessment involves the evaluation of new communications or information processing equipment, systems, and services within industry and government, as applicable to Army requirements and within Army constraints. Tasks associated with technology assessment include–

- Gathering information on new technology and services.
- Assessing new technology and services relative to the Army requirements.
- Advising NSM personnel on new technology directions.

## **ARCHITECTURE DEFINITION**

3-9. This function specifies the network and systems infrastructure. It supports the data, functional, and geographic architectures. Defining a network and systems architecture involves–

- Identifying network and systems components (organizations, hardware, software, and facilities).
- Allocating functions to the components.
- Identifying the relationships between the components.
- Determining the required interfaces to facilitate those relationships.

3-10. The architecture establishes an overall framework into which physical implementations of Army networks, processing systems, procedures, and organizations are logically placed. In short, the communications and information processing architecture defines the enterprise view of the Army networks and information processing systems. The architecture is the combination of organizational responsibilities for functions, networks and information processing systems, operational centers, support systems and databases, and the interconnection between the components. Tasks associated with architecture definition include–

- Defining (or baselining) the current architecture.
- Developing a concept of operations (CONOPs).
- Allocating functions to organizations.

- Developing the objective (or future) architecture.
- Developing a plan for transition from the baseline to the objective architecture.

## **SERVICES PLANNING AND PROGRAMMING**

3-11. This function is the analysis and determination of the communications and processing services that the Army needs to meet near and long-term requirements. It involves determining communications and information-processing resources needed to provide anticipated user service requirements.

## **SUBSYSTEM DEFINITION AND FUNDING**

3-12. This function develops network subsystem descriptions, information processing subsystems, or support systems that has a specific function within the overall communications and information processing architecture. The definition is oriented to the subsystem's function. It estimates the funding necessary to develop, acquire, install, operate, and maintain the subsystem. Tasks associated with subsystem definition and funding include–

- Defining communications or information processing capabilities in functional terms. This includes number of users, estimated traffic loads, service locations, support and maintenance requirements, and other functions based on user requirements and a knowledge of the technology and services available from industry.
- Providing the subsystem definition to engineering as a basis for developing a specification for the subsystem or operations support system.
- Planning facilities.
- Identifying funding requirements and initiating funding documents.

## **COST BENEFIT ANALYSIS**

3-13. This function is the economic alternative evaluation for a network or information processing system capability. It is the comparison of the cost of a given capability with benefits or an estimation of costs in support of a future requirement. Tasks associated with cost and benefit analysis include–

- Conducting functional economic analysis (FEA) for proposed solutions.
- Developing and analyzing the cost and benefits of each identified alternative; providing cost analysis IAW AR 25-3.

## **PERFORMANCE OBJECTIVES ESTABLISHMENT**

3-14. This function is the identification of reasonable quality of service criteria that meets user requirements and expectations. Tasks associated with performance objectives establishment include–

- Establishing, with the user, reasonable criteria for the performance objective within the bounds of what is technologically possible and economically feasible that meets validated user requirements.
- Defining network and systems parameters that influence the satisfaction of the performance criteria.

- Determining performance characteristics for individual network and systems components.
- Conducting trend analysis to determine future needs.

### **CONTINGENCY AND RESTORAL PLANNING**

3-15. This function is the development of network and systems procedures and the identification of network and systems requirements or features that prevent deterioration of network service to unacceptable levels. This deterioration may occur when system failures take place and/or when usage levels reach beyond the boundaries considered to reflect normal usage patterns. Tasks associated with contingency and restoration planning include–

- Determining spare capacity needed for backups and the cost of maintaining additional equipment and circuits or lines.
- Determining the contingency and restoration capabilities built in to new and existing networks and systems.
- Supporting Army policy and procedures in the area of contingency planning.
- Investigating alternate routing, spare equipment, circuits or lines and ports, and internetwork configurations from a network or information processing system view above the subsystem level.
- Submitting any new network or system requirements that are identified in the contingency and restoration planning process to engineering for design, development, and implementation.

### **CAPACITY PLANNING**

3-16. This function is the development of plans to change the network or information processing systems over time to support additional or fewer users and services. Tasks associated with capacity planning include–

- Developing alternative system configurations that have enough capacity to meet current demand and that are easily expandable to meet future requirements.
- Evaluating each alternative in terms of costs, engineering difficulty, life cycle of installed systems, and potential disruption in service.
- Considering variables such as requirements, topologies, costs, technology, and subsystem interfaces.
- Performing the integration of storage, transmission, and processing resources for the purpose of achieving greater efficiency, control, or reduced costs (capacity harvesting).
- Making capacity recommendations.

## **SYSTEM PLANNING**

3-17. This function is the process of planning the configuration of the network of information processing system components and capabilities. This configuration meets performance, availability, security, and capacity requirements while minimizing costs. Tasks associated with system planning include–

- Comparing and analyzing network and information processing system design alternatives supplied by systems engineering.
- Determining the optimum network or information processing system design alternatives relative to the aforementioned criteria.

## **INTEGRATION PLANNING**

3-18. This function is the development of the technical interface requirements and operational procedures necessary for adding new subsystems into the Army network or information processing systems environment. It requires the formulation of an operational concept for a new or modified subsystem that is part of the larger Army network and systems environment. Tasks associated with integration planning include–

- Identifying and defining the cost and operational and maintenance responsibilities for the initiation and termination of a new subsystem at the Armywide, theater, and installation levels of the NSM.
- Identifying the operations support systems requirements in the form of NSM capabilities and information requirements.
- Identifying and documenting issues that require additional analysis and agreement.
- Executing vendor plans.
- Reviewing transition plans.
- Reviewing logistic support requirements.
- Planning facilities.
- Performing allocation of network resources to radio frequency spectrum planning.

## **SECURITY PLANNING**

3-19. This function is the analysis of threats to, and vulnerabilities of, the network or information processing system. Tasks associated with security planning include–

- Developing security CONOPs.
- Assessing NSM security; developing NSM CONOPs. Tasks associated with ensuring the security of NSM include–
  - Protecting the integrity of information processes (verifying the network manager's authorization to alter configuration parameter values).
  - Ensuring that NSM personnel adhere to network security policies.
- Performing initial risk assessment; continuously conducting reviews of current or potential threats to, and vulnerabilities of, the network or system.

- Reporting any network or systems threats and vulnerabilities or other security-related problems and issues.
- Preparing and maintaining network and information processing system security plan.
- Identifying regulatory requirements and standards.
- Performing trade studies.
- Developing certification and accreditation plans.
- Providing input to system security requirements developed by security engineering.

## **SERVICE MEASUREMENT**

3-20. This activity domain monitors user satisfaction and the performance of the services provided by the network or information processing system components. The functions below are associated with service measurement.

## **USER HELP DESK OPERATION**

3-21. This function provides a POC for immediate assistance to communications or information processing users. The help desk assists with technical and procedural issues and problems that a user may encounter in accessing and using the network or processing hardware and software resources. Tasks associated with user help desk operation include–

- Assisting the user in identifying and verifying a potential problem.
- Providing status information to the user about the network or information processing system and the services available.
- Keeping the user informed of the operational status of the services being used.
- Coordinating with the higher echelons in the areas of performance, status, alarm monitoring, trouble detection, localization, reporting, and trouble ticket closure.
- Maintaining a network and systems view of services supported by networks and information processing systems outside the user's immediate organization's purview.
- Providing supplemental user training.
- Providing support to other organization operations centers and coordinating problem resolution.
- Operating other organization help desks, as required.
- Closing out trouble tickets.
- Establishing problem accounting and tracking procedures.

## **CUSTOMER SERVICE MONITORING AND CONTROL**

3-22. This function is the nonreal-time monitoring and analysis (from the user's perspective) of how well the network or information-processing service meets his needs. Customer service monitors the user's view of network or information processing system performance rather than the network manager's view. This function works toward effecting change to the

communications or information processing system to improve service. Tasks associated with quality of service monitoring and control include–

- Following-up problem reports to ensure customer satisfaction; conducting routine user surveys to solicit customer feedback, suggestions, and expectations.
- Monitoring metrics of importance to the user such as time to complete a telephone call, time to complete an on-line transaction, or remote job turnaround time from a computer facility.
- Overseeing the quality of NSM support in terms of speed, quality, and efficiency of the provision of services from the network or information processing system user's perspective.
- Evaluating information obtained from performance analysis, in terms of user requirements, to assist in effecting change to the network and systems performance.
- Evaluating NSM communications and information processing services such as repair, service provisioning, contracting services, and commercial services to determine whether quality standards are being met.
- Monitoring problem reporting for voice, messaging, and information processing services.
- Ensuring that all appropriate application requirements are satisfied.
- Testing capacity and special conditions to ensure capacity margins for network or information processing system components are sufficient. This may involve conducting tests or developing simulation models to determine the effects of additional network and systems loading under natural or artificial conditions.
- Analyzing actual system usage versus system capacity.
- Determining optimum performance based on user expectations.

## **PERFORMANCE ANALYSIS**

3-23. This function is the measurement and evaluation of the network or information processing system technical operating characteristics provided by the vendor and/or real-time performance managers. Tasks associated with performance analysis include–

- Dividing the network or information processing system into subnetworks or subsystems and subcomponents and directly sampling and quantifying pertinent metrics.
- Analyzing measured data on an individual subsystem basis and an overall system basis.
- Determining if the network or system is performing according to technical standards and specifications.
- Analyzing the measured performance data to determine trends, such as increasing or decreasing demands on network or system resources, and identifying possible problem areas, such as indications of probable subsystem failure or system bottlenecks.
- Reporting general performance problem areas to the commander.

- Reporting specific performance problems to the trouble desk; reporting problems requiring long-term solutions to planning or engineering.
- Performing traffic and loading studies.
- Evaluating enhancements.

## **QUALITY ASSURANCE**

3-24. This function is the technical verification that a subsystem or component is meeting various types of performance standards at any given time (those implicit in user expectations, vendor-specified operating characteristics, or performance criteria). Tasks associated with quality assurance include–

- Developing and defining performance metrics for each appropriate subsystem or component by quantifying end-user expectations for performance.
- Using standards and specifications developed for each particular system by the equipment services and specification task.
- Establishing performance baselines.
- Determining the criteria for making recommendations to remove components or subsystems from the system.
- Certifying that certain telecommunications or information processing subsystems and appropriate components meet the specified criteria for performance.
- Establishing sampling techniques IAW total quality management (TQM) and value-added procedures for continuous monitoring of subsystem and component performance relative to the established baseline.
- Operating quality control cell.

## **SERVICE PROVISIONING**

3-25. This activity domain adds, deletes, or changes network and systems services available to the user. It covers the non-engineering tasks associated with providing users access to the required services. The functions below are associated with service provisioning.

## **SERVICE REQUEST PROCESSING**

3-26. This function is the logging, tracking, and reporting of communications and information processing service requests that are submitted to the supporting organization. Tasks associated with service request processing include–

- Logging-in service requests.
- Reviewing service requests.
- Reviewing system transition plans.
- Reviewing logistic support requirements.

## **RESOURCE ASSIGNMENT**

3-27. This function is the selection of new or existing network and system resources that meet the service request requirements. Tasks associated with resource assignment include–

- Analyzing requirements in coordination with planning and engineering.
- Identifying and analyzing configuration alternatives based on knowledge of network and system configurations, routers, IP addresses, capacities, performance, traffic measurements, costs, and other measures.
- Deciding on and recommending the proper networking or information processing system solution.
- Laying out the end-to-end service requirements.
- Identifying configuration changes to specific systems.
- Preparing an NSM resource plan

## **CONFIGURATION CHANGE IMPLEMENTATION**

3-28. This function is the modification of the connectivity or parameters of a network and information processing system or equipment to provide a new or modified service. This function implements a more effective way of providing an existing service. Tasks associated with configuration change implementation include–

- Managing baseline configuration. Configuration descriptors may include hardware and software descriptions and identification, packaging (desktop, rack-mount, desk-side), and role of system(s) within the architecture (file server).
- Maintaining network and systems configuration throughout its life cycle.
- Maintaining asset status.

- Updating network and systems configuration.
- Forwarding and notifying configuration manager of changes.
- Verifying configuration documentation availability.
- Providing configuration status input to update items considered in certification and accreditation plan.

### **SUBELEMENT INSTALLATION**

3-29. This function is the installation of a new or modified component of the network or information processing system that does not require engineering support. Tasks associated with subelement installation include–

- Recording the new configuration in the configuration tracking systems.
- Assessing any impact on current operations and utilities.
- Verifying installation integrity.

### **SERVICE MODIFICATION VERIFICATION**

3-30. This function determines if a network or information processing system modification has fulfilled the requirements of the service request. Tasks associated with service modification verification include–

- Analyzing the user requirement to determine whether it was satisfied.
- Testing for local hardware and software changes to each separate system in the end-to-end path to determine requirement satisfaction.
- Testing the entire end-to-end service to determine whether it meets the user requirements.
- Contacting user to verify integrity of installation.

### **CONFIGURE END-USER EQUIPMENT**

3-31. This function is the hardware or software adaptation of the end-user equipment to make it compatible with the supporting communications and information processing systems. Tasks associated with configure end-user equipment include–

- Establishing end-user software configuration.
- Setting configuration parameters.
- Installing and providing system setup for end-user equipment, to include–
  - Defining new or relocating user or client.
  - Establishing user accounts.
  - Assigning new passwords and editing password file.
  - Enabling boot (if applicable).
  - Verifying log-in for information processing system end-user.
  - Establishing system date and time.
- Installing required communications software.

- Determining the required hardware configuration in order to interface end-user requirement with supporting communications media or information processing systems.
- Installing the necessary hardware configuration.
- Integrating and testing resulting configuration.
- Planning and configuring allocation of information processing system resources.

## **SPECIFIC MANAGEMENT FUNCTIONAL AREA**

3-32. The SMFA activity domain is patterned after standard functional definitions developed by the ISO model of SMFA and the Consultative Committee for International Telephony and Telegraphy (CCITT). ISO and CCITT target networks and communications management, rather than systems management. The SMFA activity domain provides the monitoring and control associated with keeping the network and information processing systems operating and providing quality service. The primary emphasis of SMFA activity domain lies in the five functions discussed below that are established by the standardization bodies for NSM.

## **FAULT MANAGEMENT**

3-33. This function is the detection, isolation, and correction of problems in the abnormal operation of disabled network or information processing system components. The tasks below are associated with fault management.

### **Detect and Identify Faults**

3-34. This task involves monitoring specific events or alarms to detect or predict faults and identify problem condition. Tasks associated with detection and identification of faults include–

- Specifying the event or error monitoring environment; proactively monitoring network or information system activity, to include–
  - Setting alarm threshold values for level of count when an abnormality notification should be given; specifying type of notification or triggering other processes (activating beeper and invoke command procedure).
  - Specifying logging parameters or filter settings; specifying objects to be monitored and the destination to which logging information is to be set.
  - Specifying start and stop times for the monitoring of specific performance metrics.
  - Setting the frequency of polling for specific events or errors.
- Conducting alarm surveillance.
- Analyzing monitored or logged errors or events to anticipate faults.

**Isolate Faults**

3-35. This task localizes and diagnoses faults. Tasks associated with fault isolation include–

- Defining and/or activating diagnostic and testing procedures; reactively monitoring network or information system activity; specifying error or event monitoring environment.
- Evaluating diagnostics or testing results. This evaluation–
  - Verifies that a fault has occurred.
  - Isolates the fault within the network or information processing system down to the component level.
- Consulting summary report of events/failures that have occurred within a specified time.

**Correct Faults**

3-36. This task restores the network or information processing system to proper working order. Tasks associated with fault correction include–

- Applying controls: changing or resetting resource attribute values; taking components or lines down; switching to standby components, lines, or ports; or putting components, lines, or ports back in service.
- Reinitializing systems or components: starting up or shutting down network or information processing systems or system components.
- Notifying network managers or other specified entities of faults in the network or information processing system so that coordinated actions can take place.
- Coordinating maintenance and repair: directing corrective action, correcting faults, and reporting maintenance status.
- Verifying fault resolution: ensuring that fault situations are corrected.
- Recommending close-out of problems.
- Ensuring accounting procedure feedback for bad service.
- Maintaining log: updating a record of actions taken to remedy the problem; maintaining a POC list.
- Reporting general problem areas to commander.

**PERFORMANCE MANAGEMENT**

3-37. This function monitors and controls the quality of network communications or information processing. It involves monitoring, analyzing, tuning, controlling, and reporting on network or information processing system and the network or information processing system components. The tasks below are associated with performance management.

## **Monitor and Analyze Performance**

3-38. This task establishes the monitoring environment, monitors performance indicators, and generates reports. Tasks associated with performance monitoring include–

- Establishing performance monitoring environment, to include–
  - Selecting the events, resources, or measures to be monitored.
  - Specifying the starting and stopping times for monitoring.
  - Specifying how frequently the monitored events, measures, or resources are to be polled and recorded.
  - Specifying other related performance information to be polled.
  - Specifying the threshold level when a notification of performance abnormality or degradation should be given.
- Monitoring and analyzing indicators, to include–
  - Tracking usage levels: analyzing specific performance parameters to determine if network or information processing system is being used effectively and efficiently (utilization versus load, detailed traffic profile, peak packet rates, or central processing unit [CPU] utilization).
  - Monitoring growth rate: monitoring the network or information processing system for growth indicators. This includes network utilization versus load, traffic, or load distribution among subnetworks; ratio of overhead packets to data packets; detail of traffic profile and peak hour rates; and average response time.
  - Monitoring capacity limitations: monitoring the network or information processing system to determine if the absolute capacity limitations are being approached.
  - Monitoring performance objectives: monitoring the network or information processing system to determine if the established performance objectives are met by the existing network and systems configuration or if modifications and enhancements are required.
  - Analyzing trends: recognizing potential network or information processing system problems before they occur; planning for anticipated increases or decreases in network or information processing system loads.

## **Tune and Control Performance**

3-39. This task activates controls to fine-tune performance of the network or information processing system. Recognition and diagnosis of performance deficiencies are necessary. The goal is to optimize the network and system to the highest state of performance. Tasks associated with performance tuning and control include–

- Developing tuning strategy: identifying appropriate mechanisms (adjustment of network or systems performance tuning parameters such as those which control buffer size, balance loading, and storage optimization).

- Performing capacity harvesting: conducting dynamic network and information processing resource allocation via the integration of storage, transmission, and processing resources for the purpose of achieving greater efficiency, control, or reduced costs (circuit bundling).
- Providing suggestions to users (modification of pattern of job submissions and appropriate directory management).
- Evaluating performance tuning: incorporating feedback mechanism to evaluate performance tuning results in terms of specified measures or criteria, performance objectives, or quality of service; evaluating both short-term monitoring and long-term monitoring and analysis.
- Evaluating performance objectives: determining if long-term performance objectives are achievable.

### **Generate Reports**

3-40. This task reports on performance monitoring, tuning, tracking, and trend analysis. Tasks associated generating reports include–

- Specifying report criteria (throughput of a specified domain in the past 24 hours, week, month, or year) according to requirements from requesting activity domain functions.
- Providing baseline performance characterization of the network or information processing system against which the impact of new user requirements can be evaluated.

## **CONFIGURATION MANAGEMENT**

3-41. This function exercises control over, collects data from, and provides data to networks. This is to prepare for, initialize, start, provide for the continuous operation of, and terminate interconnection of processing services. Configuration management functions and tasks may overlap with fault management, performance management, long-term planning of the network topology, information processing of the systems' configuration, and inventory. The tasks below are associated with configuration management.

### **Initialize and Terminate Operations**

3-42. This task starts up and shuts down network or information processing system and other end-system operations. Tasks associated with initializing and terminating operations include–

- Initializing operation: booting or rebooting, verifying that all resource setting attributes and relationships have been properly set, notifying users of any resource attributes or relationships still needing to be set, and validating the users' initialization command.
- Terminating operation: requesting retrieval of specified statistics block or status information before the termination procedures have completed; notifying users of shutdown.

### **Establish Configuration**

3-43. This task defines and maintains network and information processing system data, resources, and attributes. Tasks associated with establishing configuration include–

- Setting equipment attribute values: setting the parameters that control the routine operation of the network or information processing system or condition that exists between network or information processing system resources.
- Defining resources, attributes, and relationships: identifying the components that comprise the network or information processing system; defining the operating characteristics of these components and relationships between the components.

### **Maintain Configuration**

3-44. This task maintains the desired real-time configuration status. Tasks associated with maintaining configuration include–

- Querying configuration data: examining resource attribute values and relationships. Viewing the list of attributes associated with the resources, the current values of these resources, and the relationships among network or information processing system resources.
- Modifying attribute values of equipment – modifying the parameters that control the routine operation of the network or information processing system or condition that exists between network and information processing system resources.
- Reporting configuration data – requesting routine snapshots of the network or information processing system configuration and status (a snapshot of network performance every five minutes).

### **Distribute Software**

3-45. This task distributes software throughout the network. Tasks associated with distributing software include–

- Permitting software loading requests.
- Transmitting the specified versions of the software.
- Notifying the user at the completion of software loading.
- Updating the configuration tracking systems (version control).

### **Generate Reports**

3-46. This task generates reports throughout the network. Tasks associated with report generation include–

- Generating configuration reports to include network connectivity, network topology, and node resources.
- Generating configuration reports for information processing system configuration, attributes, and values.
- Broadcasting configuration news (notices regarding significant changes or changes of general user interest in network and systems configuration).

## **Perform System Administration**

3-47. This task performs nonreal-time configuration maintenance activities at the information processing system or end-user system level. Tasks performed in conjunction with systems administration include–

- System startup and shutdown.
- System tuning (system parameter adjustment, load balancing, and scheduling).
- System diagnostics.
- System maintenance, to include–
  - Maintaining directories.
  - Maintaining information processing system standard settings.
  - Maintaining disk partitions.
  - Updating logs, including hardware changes or additions and configuration checklists.
- Disk and tape management, to include–
  - Formatting.
  - File system checks.
  - Disk defragmentation.
- File management, to include–
  - Backing up and recovering operations (including locating and reloading files stored off-line).
  - Developing backup schedule.
  - Labeling, mounting, and formatting removable media.
  - Setting and reviewing storage media parameters.
  - Monitoring disk usage.
  - Changing file permission.
- Software management (subject to configuration control after installation) in the context of system administration, to include–
  - Installing and deleting software packages.
  - Designating as obsolete and archiving unused applications and data.
  - Managing software configuration or monitoring software version status.
- Terminal management (adding, removing, configuring, and enabling).
- User management, to include–
  - Adding and deleting users, groups, and passwords.
  - Managing user log-ins.
- Peripheral device management, to include printers, disk and tape drives, modems, scanners, and other devices. Tasks associated with peripheral device management include–
  - Adding/removing devices.

- Configuring devices.
  - Enabling devices.
- E-mail management, to include–
  - Setting up communication lines.
  - Assigning system names and addresses.
  - Assigning mail log-ins.
  - Adding other systems.
  - Establishing restricted access e-mail-only accounts.
  - Ensuring consistency between e-mail address databases.
- System security management, to include performing backup of security-related system information and many of the tasks listed in the security management domain.
- Multi-user accounting includes management of the following usage statistics:
  - Per process file (name of program executed, elapsed and CPU times, main memory usage, amount of input/output [I/O] activity, user/group identification of process, and terminal from which process was started).
  - Per log-in file (user name, user ID, CPU time used, terminal connection time, number of processes executed, and disk usage).
- Network administration, to include–
  - Maintaining connections to the network.
  - Cleaning up undeliverable jobs.
  - Cleaning up the public area.
  - Maintaining log files.
- Remote file sharing (RFS) administration, to include–
  - Setting up RFS.
  - Starting and stopping RFS.
  - Sharing resources.
  - Mapping remote users.

## **SECURITY MANAGEMENT**

3-48. This function is the management of the network or information processing system security services. Security management controls and monitors mechanisms that exist to protect selected network or information processing system resources, user information, or security objects. Security management includes controlling access to resources, archiving and retrieving security information, and managing the encryption process. The tasks below are associated with security management.

### **Control Access to Resources**

3-49. This task grants or restricts access to the entire network or information process system or selected critical parts. Tasks associated with controlling access to resources include–

- Controlling authorization: verifying the appropriate authorization for persons attempting to access network or information processing system resources (allow only authorized personnel to perform various configuration functions).
- Controlling authentication: proving the identity of personnel attempting to access network or information processing system resources.
- Controlling access to security codes, source routing, and route recording.
- Controlling access to directories and information bases.
- Controlling the setting of threshold levels and accounting table usage data.
- Controlling updates to directories (including addition, deletion, and modification of directory entries).
- Controlling the distribution of directory information and routing tables.
- Prioritizing access to requested network or information processing system resources.
- Altering security procedures or modifying security information at appropriate nodes on the system in order to recover from actual or suspected security attack.

### **Retrieve and Archive Security Information**

3-50. This task gathers relevant information, stores the information, and accesses that information for analysis, detection, and control purposes. Tasks associated with archiving and retrieving security information include–

- Controlling event logging.
- Monitoring security audit trails: providing third-party activity registration to verify that it occurred.
- Monitoring usage and users of security-related resources.
- Reporting security violations and authentication problems and issues.
- Receiving notification of security violations; detecting modifications, loss, insertion, replay, or reflection of information.
- Maintaining and examining security logs.
- Maintaining redundant or backup copies for all or part of security related files (authentication or password files).
- Maintaining general network and information system user profiles and usage profiles for specific resources to enable reference for conformance to designated security profiles.
- Reporting security-related problems and issues.

**Manage and Control the Encryption Process**

3-51. This task manages and controls the encryption process, when required. Tasks associated with managing and controlling the encryption process include–

- Managing encryption (encryption algorithm selection).
- Managing encryption keys, to include:
  - Managing variable generation for the cryptographic encoding of information.
  - Issuing, distributing, renewing, and tracking encryption keys.
  - Reporting key management problems and issues.

**ACCOUNTING MANAGEMENT**

3-52. This function enables charges to be established for resources in the network or information processing system and for costs to be identified for the use of those resources. The functions below are associated with accounting management.

**Specify Usage Data to Collect**

3-53. This task configures the accounting management environment with accounting information collected IAW the charge-back function of the administration activity domain. The tasks associated with setting the accounting information to be collected include–

- Setting the types of accounting information to be collected (connection or transmission time) and duration of the collection period.
- Setting the standard metrics and defining the accounting information units (call or connection duration, number of bits, characters, blocks, or files transmitted).

**Set and Modify Accounting Limits**

3-54. This task reads, sets, and changes accounting limits for various groups of users. For example, balance the usage of network transmission capacity among users and limit user access to the network to various levels at different times depending on the overall network load or accounting (finance) policy changes.

**Collect and Store Usage Data**

3-55. This task gathers and records accounting information (user network connection time and quantity of data transmission).

**Control Storage of, and Access to, Usage Data**

3-56. This function stores and retrieves accounting information. Tasks associated with controlling the storage of, and access to, accounting information include–

- Maintaining rate tables.
- Controlling charge-back matrix.

- Passing accounting information to the charge-back function in the administration activity domain.
- Archiving accounting information files.
- Controlling access to accounting information files.

### **Generate Reports**

3-57. This task produces summaries of accounting information IAW procedures defined by the administration activity domain.

## **ADMINISTRATION**

3-58. This activity domain provides the performance of nonengineering and nonreal-time functions that are associated with budgeting, training, procurement, staffing, and other business-related functions. The functions below are associated with the administration activity domain.

## **POLICY AND PROCEDURE DEVELOPMENT AND MAINTENANCE**

3-59. This function is the formulation, documentation, and changing of rules and regulations that govern the administration of network and systems assets, facilities, and personnel. Tasks associated with policy and procedure development and maintenance include–

- Coordinating policy inputs from multiple organizations to develop policies and procedures.
- Reviewing relevant DOD and Army documents.
- Maintaining policy uniformity.
- Establish accounting and tracking procedures.

## **TRAINING MANAGEMENT**

3-60. This function is the scheduling and tracking of adequate training for Army communications and information processing technicians and managers to meet job performance standards and career path objectives, meet current requirements, and anticipate future needs. Tasks associated with training management include–

- Defining training requirements.
- Assessing training requirements and course material.
- Making courses available to the NSM personnel.
- Evaluating certification requirements and trainee feedback.
- Consolidating the training needs and ensuring that corresponding budget entries are made.

## **PROGRAM AND BUDGET MANAGEMENT**

3-61. This function achieves an NSM program objective defined within the constraints of schedule, performance, and resources. Successful programs achieve the performance specifications within the budgeted cost and time schedule. Budget management is the fiscal management of the network and systems resources to include facilities, equipment, and personnel. It includes financial analysis to assess spending trends, compares costs among

organizations, anticipates needs, justifies requests for service, and tracks expenditures. Tasks associated with network and systems program and budget management include–

- Establishing program goals.
- Developing a plan to achieve the program goals.
- Developing a funding profile, including funding requirements.
- Developing future budget projections; monitoring obligated and targeted funds.
- Preparing equipment, circuit, and service estimates for the annual and future year requirements.
- Tracking communications and information processing costs and budget modifications.
- Evaluating and executing funding requirements.
- Collecting and validating communication and information processing budgets from other organizations, as required.
- Managing and monitoring program resources.
- Requesting additional funding when necessary to meet shortfalls.
- Receiving and reviewing operations and maintenance, Army (OMA) and other procurement, Army (OPA) funds.
- Justifying OMA and OPA funds.
- Preparing financial status reports.
- Prepare NSM resource plan.

## **PROCUREMENT**

3-62. This function enables the Army to negotiate and form agreements to provide communications and information processing services and acquire network and information processing system resources. Tasks associated with procurement and contracting include–

- Providing contracting officer's representative support via contractor performance surveillance and validation.
- Receiving, validating, reviewing, and verifying contract obligation.

## **STAFFING MANAGEMENT**

3-63. This function creates and maintains an NSM organizational structure and determines the proper staffing levels. Tasks associated with staffing management include–

- Identifying tasks necessary to support NSM.
- Determining where the tasks should be performed.
- Determining which tasks should be grouped together as a common organization.
- Establishing the lines of authority within the formal organizational structure.
- Evaluating the required skills and education.
- Identifying funding requirements.

- Determining staffing needs.
- Monitoring current workload and staffing level adequacy.
- Submitting requests for manpower adjustments.

## **CHARGE-BACK**

3-64. This function charges or bills network or system users based upon their apportioned utilization of network or information processing system services, equipment, and facilities. Tasks associated with managing charge-back include

- Establishing charges, to include–
  - Establishing and modifying accounting limits; enabling accounting limits to be set and tariff schedules to be associated with the use of resources.
  - Enabling costs to be combined where multiple resources are invoked to achieve a given communications or information processing objective.
  - Modifying accounting limits to reflect new program priorities established by program and budget management.
  - Informing the accounting management function of established accounting limits.
- Informing the user of established charges for applicable end-user services.
- Controlling fee-for-service billing process; billing the users for resource usage.
- Notifying users of accounting thresholds exceeded.
- Establishing accounting and tracking procedures.
- Receiving data collected and reported by the accounting management function.
- Ensuring that usage information is recorded, stored, and made available for calculating and reporting resource usage.
- Reporting summary of network or information processing system charges to the commander.

## **DIRECTORY SERVICES AND ASSISTANCE**

3-65. This function provides location information about individuals, resources, and applications available as part of NSM. Tasks associated with directory services and assistance include–

- Receiving end-users changes.
- Maintaining directory (updating locations and adding and deleting individuals, resources, and applications).
- Verifying changes with end-users.
- Responding to end-user inquiries.
- Producing regular reports as directed by administration.

## **SPECIAL SERVICES**

3-66. This function considers special needs users may require to fulfill their particular mission. Tasks associated with the management of special services include–

- Providing mobilization-planning support.
- Providing specialized support.
- Managing special events.
- Ensuring CONOP so that the network or system is operable on demand.

## **ENGINEERING**

3-67. This activity domain provides the specification and tailoring of network and systems resources in order to meet user requirements for service. Engineering bases network and systems requirements on planning direction that relates to capacity allocation and services that are to be implemented. The functions below are associated with NSM engineering.

## **PLANNING ASSISTANCE TO USERS**

3-68. This function provides technical guidance and recommendations to users to establish feasibility and estimate communications and information processing resource requirements. It involves assisting the user in determining project feasibility, estimating resources and costs, projecting implementation time frame, and other user-related network and systems planning items.

## **SYSTEMS ENGINEERING**

3-69. This function is the specification and design of the overall network and information processing system with emphasis on the integration of subnetworks, subsystems, and support subsystems to meet communications and processing requirements. It involves engineering from the point of view of a network of networks or a system of systems. Tasks associated with systems engineering include–

- Ensuring that all the separate pieces of the network and systems work together to provide the required service.
- Engineering the operations support system that is necessary to monitor and control the required set of services.
- Developing the capability of sharing NSM information such as alarm and configuration data.
- Defining roles for all the operations support systems components.
- Configuring network or information processing system components and capabilities that meet requirements for performance, availability, security, and capacity while minimizing costs.
- Determining sizing and capacity measurements.
- Determining configuration.
- Determining system parameters.

## **SECURITY ENGINEERING**

3-70. This function is the specification and design of security for the network and information processing system. Tasks associated with security engineering include–

- Defining network or system security requirements.
- Reviewing and evaluating the security impact of changes to the network or system, including interfaces to other networks or systems.
- Evaluating security architecture/design.
- Evaluating and testing the security of NSM CONOPs.
- Providing risk management: identifying, controlling, and eliminating or minimizing uncertain events that may affect system resources. Risk management includes risk analysis, cost benefit analysis, selection, implementation and test, security evaluation of safeguards, and overall security review.
- Performing risk analysis: identifying security risks, determining their magnitude, and identifying areas needing safeguards.
- Establishing virus detection and prevention procedures.
- Evaluating assurance evidence (covert channel analysis).
- Performing system certification.
- Certifying nonsystem safeguards; identifying potential additional safeguards.
- Resolving technical and operational issues.
- Presenting accreditation package to the designated approval authority.
- Evaluating trusted distribution as part of the production and deployment phase.
- Certifying in-field compliance; continuing to recertify safeguards throughout system life cycle.
- Updating certification and accreditation plan originating from the security planning function. In conjunction with the configuration management function, this task requires tracking changes to the system and its operational environment as the system is deployed.

## **FACILITY AND EQUIPMENT ENGINEERING**

3-71. This function is the specification, configuration, development, and implementation of the facilities and equipment that comprise a network or information processing center. It meets user communications or information processing needs within designated performance parameters at a reasonable cost. Tasks associated with facility and equipment engineering include–

- Reviewing the initial information about future network or information processing system designs, services, and features from the planning domain.
- Defining the new system configuration in terms of equipment and facilities required.

## **INTEGRATION ENGINEERING FOR OPERATIONS, FACILITIES, AND EQUIPMENT**

3-72. This function assesses a new or modified system as an integral part of the Army network and information processing systems and the NSM infrastructure. Integration involves the physical network or information processing system and the NSM functions that must be performed during the system life cycle. Interoperability testing is a task associated with integration engineering for operations, facilities, and equipment.

## **TECHNICAL DOCUMENTATION**

3-73. This function collectively refers to technical standards and procedures. Technical documentation ensures that network and systems maintenance is performed in a correct and consistent manner. Technical standards are primarily used in the design and installation of networks and systems. Technical procedures are established in technical manuals (TMs) and are used for establishing proper operation and maintenance of Army systems. Maintenance procedures in the TMs, if properly designed and installed, should maintain the equipment so that operational requirements are met. Tasks associated with technical documentation include–

- Developing the engineering standards that define the allowable parameters for performing functions in the NSM areas.
- Selecting and maintaining engineering procedures and handbooks that recommend engineering methods for ensuring that a system functions at acceptable levels of performance.
- Developing a maintenance handbook covering the maintenance approach for systems that may also include the actual maintenance procedures.
- Ensuring that engineering documentation is kept current and accurate.
- Maintaining written standards and procedures for each activity and naming and addressing conventions.
- Maintaining on-line manuals and help resources.
- Recommending network and systems technology standards and procedures based on approved architecture.
- Reviewing network and systems engineering documents from external organizations.
- Obtaining network and systems requirements from external organizations.

## **EQUIPMENT AND SERVICES SPECIFICATION**

3-74. This function establishes the communications and information processing requirements in terms of the system capabilities, performance, reliability, interfaces, standards, configuration, quantities, and support. Tasks associated with equipment and services specification include–

- Collecting and analyzing information from vendors and in-house technical personnel.
- Developing the specifications derived in part from the front-end planning information that consists of network or information

processing system designs, subsystem definitions, and technology assessments.

- Ensuring compliance with standards: ensuring that the network or information processing system components in the configuration are designed and installed IAW prescribed standards.
- Certifying configuration items to be IAW regulations.

## **EQUIPMENT TESTING AND EVALUATION**

3-75. This function verifies that a system or system subelement meets the applicable specifications. Tasks associated with equipment testing and evaluation include–

- Developing a test plan that sets procedures and specifications that enable the recording of quantitative and qualitative measurements.
- Performing network or information processing system component testing before the component is put into service.
- Performing tests and evaluations according to an approved test plan.
- Evaluating measured test results to determine whether the systems meet applicable specifications. Evaluation is explicitly concerned with identifying the differences between expected and actual results.
- Gathering and evaluating trend information.
- Advising user on the results of the test, as required.

## **IMPLEMENTATION PROCEDURES DEVELOPMENT**

3-76. This function is the generic guidelines for proper implementation of new communications and information processing systems. Tasks associated with implementation procedures development include–

- Developing procedures and specifications to include–
  - Technology description.
  - Typical service applications.
  - Configuration descriptions.
  - Options for hardware and software.
  - Interface requirements.
  - Integration specifications.
  - Test procedures.
- Maintaining policy uniformity of data forms and configuration reports.
- Developing operating procedures.

## **IMPLEMENTATION DESIGN**

3-77. This function is the development of design specifications required when fielding a new or modified telecommunications or information processing system at a specific site. Tasks associated with implementation design include–

- Developing an implementation design for the specific site to include–
  - Space availability and utilization.
  - Power requirements.
  - New system configuration.
  - Near-term site changes.
  - Site organization.
  - Operational procedures.
  - Schematics showing hardware and wiring layouts.
- Determining technical implementation.
- Coordinating technical and engineering plans.
- Testing implementation.
- Developing engineering plans.

## **MONITOR CONTRACTOR ENGINEERING ACTIVITY**

3-78. This function is the periodic tracking and monitoring of the work performed by contractors. It evaluates the progress and quality of the products and services provided by contractors. Tasks associated with monitoring contractor engineering activity include–

- Monitoring and validating contractor performance.
- Reviewing, verifying, and validating contract obligation.
- Conducting design reviews.
- Conducting status reviews.
- Conducting acceptance testing.
- Preparing an evaluation report which documents–
  - Evaluation results.
  - Identified issues.
  - Action items and agreements.
  - Future direction of the contracted effort.

## **MAJOR EQUIPMENT INSTALLATION**

3-79. This function includes the activities performed at a site-specific level to execute the implementation design for the installation of the communications or information processing system. Tasks associated with major equipment installation include–

- Installing all equipment, software, and interfaces.
- Performing testing according to a documented test plan.

## **TECHNICAL ASSISTANCE**

3-80. This function provides operations and maintenance with a centralized source of system expertise to resolve technical problems that are beyond the normal capabilities of the operations and maintenance personnel. Technical assistance is also referred to as depot level support or engineering level maintenance support. Tasks associated with technical assistance include–

- Providing technical expertise.
- Providing technical and engineering support to the operations center.
- Coordinating problem resolution.

## **RESEARCH AND DEVELOPMENT (R&D) TEST-BED FOR DESIGN CONCEPTS**

3-81. This function analyzes the introduction of new technology into the system or determines the applicability of a product or service to meet requirements. Tasks associated with R&D test-bed activities include–

- Coordinating and executing functional technical evaluations.
- Prototyping applications of new technologies.
- Developing alternative technical approaches to current operations.

## **HARDWARE AND SOFTWARE DEVELOPMENT**

3-82. This function is the additional hardware and software design, development, and implementation required to tailor networks and systems to meet specific Army requirements that are not met by the general system engineering function. Hardware and software development directs the development, implementation, and integration of automated systems.

## **INFORMATION SYSTEMS SUPPORT AND DEVELOPMENT**

3-83. This function develops and maintains automated systems to support NSM tasks. Tasks associated with information systems support and development include–

- Coordinating the entire information systems life cycle from feasibility establishment to design, prototyping, implementation, documentation, and maintenance.
- Working with Army users to define system requirements, including functional descriptions and identification of information needs.

## **LOGISTICS**

3-84. This domain monitors, evaluates, controls, and maintains the Army's networks and systems. Logistics includes procurement, handling, storage, packaging, distribution, maintenance, and replacement of NSM materiel, including hardware such as spare/repair parts and consumable items. The functions below are associated with logistics.

## **MAINTENANCE**

3-85. This function keeps network and systems materiel in operational condition. Preventive and corrective maintenance are performed. Both may be provided by in-house or contractor personnel.

### **Preventive Maintenance**

3-86. This function tests, adjusts, or replaces supplements on a scheduled basis to lower the probability of trouble occurrences and maintain optimum performance. Tasks associated with preventive maintenance include maintenance scheduling and conflict resolution.

### **Corrective Maintenance**

3-87. This function is concerned with the network or systems restoral to normal operation with the least possible time delay. Corrective maintenance is directly involved with the real-time fault management functional area of the SMFA activity domain.

## **SUPPLY**

3-88. This function makes network and systems-related materiel available for use. Supply involves the release, requisition, receipt, stockage, storage, and issue of equipment and spare and/or replacement parts. In this context, supply also implies the management of the inventory of equipment and spare parts and consumable items such as ribbons, ink, and paper.

### **Requisition Processing**

3-89. This function fulfills requests for equipment or spare parts. Tasks associated with requisition processing include–

- Receiving and validating requisition.
- Checking inventory for availability of equipment or parts.
- Purchasing unavailable equipment or parts through procurement.
- Issuing equipment or parts to requester.
- Updating inventory, as required.

### **Equipment Inventory Management**

3-90. This function maintains information about network and information processing systems equipment, circuits, lines, ports, and subcomponents, including instance identification, location, status, spare parts availability, and other relative attributes. Tasks associated with equipment inventory management include–

- Setting up and maintaining the inventory baseline.
- Tracking inventory changes.

## **Stockage**

3-91. This function maintains the levels of supply items to satisfy anticipated requisitions. Tasks associated with stockage include–

- Determining required levels of supply items.
- Acquiring supply items not in stock.
- Updating and maintaining stockage inventory.